ABSTRACT

COMPENSATING FOR POLARISATION MODE DISPERSION IN OPTICAL TRANSMISSION FIBRES

Compensating for polarisation mode dispersion in a birefringent optical transmission fibre is achieved by controlling the birefringence of the fibre. The difference in group velocity of the orthogonal polarisation states of an optical signal transmitted over the fibre is monitored to generate an error signal representing the difference. The birefringence of the fibre is adjusted accordingly to minimise the difference and thereby provide dynamic compensation. Birefringence control may be achieved by a non-linear fibre grating written into the fibre to impose a differential time delay. The fibre may be a side hole fibre (SHF), a holey fibre (HF), a photonic crystal fibre (PCF), or any other suitable microstructure fibre. The fibre may have stressing rods, may be tapered along its length and may be controlled electrically, mechanically, acoustically or thermally by spaced heating elements.